

REMARKS

Applicant respectfully requests reconsideration of the above-identified application in view of the foregoing amendments and the following remarks. Claims 1-36 are currently pending in the application. In the Office Action of May 7, 2003, the drawings were objected to as including certain reference signs that were not mentioned in the description. Claim 1 was rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,020,487 to Winter. Claims 2-5 and 20-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Winter in view of U.S. Patent No. 5,459,427 to Chambers et al. Claims 6 and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Winter in view of Chambers et al. and further in view of U.S. Patent No. 4,514,476 to Fitzgerald. Claims 7 and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Winter in view of Chambers et al. and further in view of U.S. Patent No. 6,011,389 to Masreliez et al. Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Winter in view of U.S. Patent No. 6,508,122 to McCall et al. Claims 14 and 31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Winter in view of U.S. Patent No. 3,665,305 to Petrohilos. Claims 15 and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Winter in view of U.S. Patent No. 6,011,389 to Masreliez et al. Claims 9-13, 16-18, 27-30, and 33-35 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 19 and 36 were allowed.

I. Objection to the Drawings

The drawings were objected to as failing to comply with 37 C.F.R. § 1.84(p)(5) as including reference signs that were not mentioned in the description. More specifically, the Examiner noted that certain reference numbers shown in FIGURE 2, relating to certain of the control signal lines 160 were not mentioned in the description.

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In response, as suggested by the Examiner, applicant has amended the specification to add the reference signs shown in FIGURE 2. More specifically, in addition to the lines 160A-160F which were previously described on pages 10 and 11 of the specification, the specification has now been amended to also include references to the lines 160G, 160H and 160I.

II. Rejections Under 35 U.S.C. §§ 102 and 103

A. Claim 1

Claim 1 was rejected as being anticipated by Winter. The Examiner stated that Winter discloses a system suitable for processing signals in a low-power measuring instrument. Applicant notes that Claim 1 specifically requires a "low voltage" power supply. Applicant respectfully asserts that Winter does not address this aspect of Claim 1. Applicant asserts that Winter does not teach, disclose, or suggest a "low power" instrument, either at column 5, lines 5-12, or elsewhere. In order to further clarify applicant's invention, Claim 1 has been amended to recite "*operable from a low voltage power supply providing a voltage less than 1.75 volts*". Applicant asserts that Winter does not teach, suggest or disclose a "low power" instrument. In contrast, Winter's circuits include significantly more components than are shown in applicant's disclosed embodiments, including numerous resistors which will contribute to significant power dissipation. In contrast, applicant discloses embodiments which include very few components and very few resistors, in order to enable applicant's claimed low voltage and low power operation.

In addition, applicant asserts that Winter does not teach, disclose, or suggest a "low voltage" instrument. Where voltages are specifically disclosed, such as in FIGURE 6, voltages of 10 volts and 5 volts are shown. In utilizing such voltages, Winter discloses only conventional circuit blocks. Thus, applicant asserts that low voltage operation is not enabled by Winter. In particular, differential signal processing operation using a single-ended voltage less than

1.75 volts is particularly difficult, and is not known by applicant to be achievable with the conventional components indicated by Winter's blocks.

With regard to Chambers being utilized to modify Winter, according to applicant's understanding, the circuits of Chambers are applicable to DC level shifting of an analog signal. To DC shift any of the ramp or differential input signals of Winter, or of applicant's disclosed invention (particularly starting with a power supply voltage of less than 1.75 volts as now claimed in amended Claim 1) would needlessly introduce another potential error source into the critical signals, and would also reduce the available voltage swing of either the ramp signal or the differential input signals, in either case reducing the available analog signal-to-noise ratio and related accuracy of the circuits. Thus, applicant asserts that there is no teaching or suggestion, nor is there a motivation, to combine the circuit of Chambers with the circuits of Winter so as to achieve applicant's claimed invention.

Furthermore, applicant asserts that it is not clear where the individual circuit techniques or elements of Chambers could somehow be substituted for the individual circuit techniques or elements of Winters. Applicant further asserts that even if such a combination were somehow made, any resulting circuit would still include significantly more components than applicant's disclosed embodiments, including numerous resistors, which would contribute to significant power dissipation. In contrast, applicant discloses embodiments which include very few components and very few resistors, in order to enable applicant's claimed low voltage and low power operation, which applicant asserts is important when starting with a power supply voltage of less than 1.75 volts, as now recited in amended Claim 1.

B. Claims 2-36

Claim 2 has been amended, and now further requires that the system is operable at 1.5 volts. Therefore, applicant respectfully submits that Claim 2 is in condition for allowance.

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Claim 3 is deleted, the subject matter having been incorporated into Claim 1.

Claim 4 has been amended to include subject matter previously included in Claim 7, and now further requires that the system of Claim 1 is operable at an average current of 10 microamps or less. Therefore, applicant respectfully submits that Claim 4 is in condition for allowance.

Claim 5 has been amended to include subject matter previously included in Claim 6 and further limits the power supply. Therefore, applicant respectfully submits that Claim 5 is in condition for allowance.

Claims 6 and 7 are deleted without prejudice or disclaimer.

Claim 8 further limits the system of Claim 1. Therefore, applicant respectfully submits that Claim 8 is in condition for allowance.

Applicant gratefully acknowledges the Examiner's remark that Claims 9-13 would be allowed if combined with limitations of Claim 1 and intervening claims. However, in view of applicant's foregoing remarks and amendments, applicant points out that Claim 9 and amended Claims 10-13 now further limit the system of Claim 8. Therefore, applicant respectfully submits that Claims 9-13 are also in condition for allowance.

Claim 14 is deleted without prejudice or disclaimer.

Claim 15 further limits the system of Claim 1. Therefore, applicant respectfully submits that Claim 15 is in condition for allowance.

Applicant gratefully acknowledges the Examiner's remark that Claims 16-18 would be allowed if combined with limitations of Claim 1 and intervening claims. However, in view of applicant's foregoing remarks and amendments, applicant points out that Claims 16-18 further limit the system of Claim 15. Therefore, applicant respectfully submits that Claims 16-18 are also in condition for allowance.

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Applicant gratefully acknowledges the Examiner's allowance of Claim 19.

Applicant respectfully submits that method Claims 20 and 21, similar to apparatus Claims 1 and 2, are also in condition for allowance for similar reasons.

Claim 22 has been amended to include subject matter previously included in Claim 23, and further limits the method of Claim 20. Therefore, applicant respectfully submits that Claim 22 is in condition for allowance.

Claims 23-25 are deleted without prejudice or disclaimer.

Claim 26 further limits the method of Claim 22. Therefore, applicant respectfully submits that Claim 26 is in condition for allowance.

Applicant gratefully acknowledges the Examiner's remark that Claims 27-30 would be allowed if combined with limitations of Claim 1 and intervening claims. However, in view of applicant's foregoing remarks and amendments, applicant points out that Claim 27 and amended Claim 28 now further limit the method of Claim 20. Therefore, applicant respectfully submits that Claims 27 and 28 are also in condition for allowance.

The subject matter of Claim 29 is now included in amended Claim 30, which further limits the method of Claim 20. Therefore, applicant respectfully submits that Claim 30 is also in condition for allowance.

Claims 29 and 31 are deleted without prejudice or disclaimer.

Claim 32 further limits the method of Claim 20. Therefore, applicant respectfully submits that Claim 32 is also in condition for allowance.

Applicant gratefully acknowledges the Examiner's remark that Claims 33-35 would be allowed if combined with limitations of Claim 20 and intervening claims. However, in view of applicant's foregoing remarks and amendments, applicant points out that Claims 33-35 further

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limit the system of Claim 32. Therefore, applicant respectfully submits that Claims 33-35 are also in condition for allowance.

Applicant gratefully acknowledges the Examiner's allowance of Claim 36.

III. New Claims 37-45

New Claim 37 combines certain distinguishing features of original Claims 1 and 11. In particular, a combination of features which provide that a scale factor of the signal processing circuit and the signal amplitude of the differential signals determined by the transducer change in a manner that compensates each other with regard to variations in the voltage of the power supply, such that the overall measurement accuracy of a measuring instrument including the signal processing system and the transducer is substantially insensitive to variations in the voltage of the power supply during normal operation. Such a combination of features are supported throughout the application, especially including related description from page 29, line 21 through page 30, line 26. Applicant asserts that the combination of features claimed in new Claim 37 is not taught, disclosed, or suggested by any of the cited references. Therefore, applicant respectfully submits that Claim 37 is in condition for allowance, along with the related new dependent Claims 38-42.

Applicant respectfully submits that new method Claim 43, similar to new apparatus Claim 37, is also in condition for allowance for similar reasons, along with related new dependent Claims 44-45.

CONCLUSION

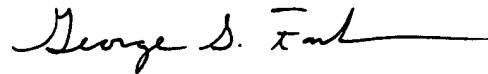
For the reasons discussed above, applicant believes that Claims 1, 2, 4, 5, 8-13, 15-22, 26-28, 30, and 32-45 are in condition for allowance. Therefore, applicant respectfully requests that the claims be allowed and that the case be passed to issue. Should any further questions

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remain, the Examiner is invited to contact applicant's attorney at the telephone number listed below.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the U.S. Postal Service in a sealed envelope as first class mail with postage thereon fully prepaid and addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the below date.

Date: Nov. 7, 2003



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